

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION**

MONTEREY RESEARCH, LLC,

Plaintiff,

v.

ADVANCED MICRO DEVICES, INC.,

Defendant.

Civil Action No. 6:21-cv-839-ADA

JURY TRIAL DEMANDED

AMENDED COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Monterey Research, LLC (“Monterey”), for its Amended Complaint for Patent Infringement against defendant Advanced Micro Devices, Inc. (“AMD”), alleges as follows:

INTRODUCTION

1. Monterey is an intellectual property and technology licensing company. Monterey’s patent portfolio comprises over 1,500 active and pending patents worldwide, including approximately 1,200 active United States patents. Monterey’s patent portfolio stems from technology developed from a number of leading high-technology companies, including Cypress Semiconductor Corporation. Those innovations have greatly enhanced the capabilities of computer systems, increased electronic device processing power, and reduced electronic device power consumption. Among other things, those inventions produced significant technological advances, including smaller, faster, and more efficient semiconductors and integrated circuits.

2. AMD has infringed and continues to infringe Monterey’s patents. Moreover, despite Monterey notifying AMD of infringement, AMD has thus far refused to license these patents. Instead, AMD has continued to make, use, sell, offer to sell, and/or import Monterey’s intellectual property within the United States without Monterey’s permission.

NATURE OF THE ACTION

3. This action arises under 35 U.S.C. § 271 for AMD's infringement of Monterey's patents, including United States Patent Nos. 6,979,640 ("the '640 patent"); 7,609,799 ("the '799 patent"); 7,899,145 ("the '145 patent"); 8,572,297 ("the '297 patent"); 8,103,497 ("the '497 patent") (collectively, "the Patents-in-Suit").

THE PARTIES

4. Plaintiff Monterey is a Delaware limited liability company with offices in New Jersey and California.

5. Defendant AMD is a Delaware corporation with a regular and established place of business at 7171 Southwest Parkway, Austin, Texas 78735. AMD is a publicly traded company that may be served in Texas through its registered agent for service, CT Corporation System, 1999 Bryan St., Ste. 900, Dallas, TX 75201.

JURISDICTION AND VENUE

6. This Court has jurisdiction over the subject matter of this action under 28 U.S.C. §§ 1331 and 1338(a) at least because this action arises under the patent laws of the United States, including 35 U.S.C. § 271 *et seq.*

7. This Court has personal jurisdiction over AMD at least because AMD has a regular and established place of business in the State of Texas. AMD also has a registered agent for service of process in Texas. In addition, AMD has committed, aided, abetted, contributed to, and/or participated in the commission of acts of infringement giving rise to this action within the State of Texas, including in this District and elsewhere, by, *inter alia*, directly and/or indirectly making, using, selling, offering for sale, importing products (including importing products made by a patented process) and/or practicing methods that practice one or more claims of the Patents-in-Suit. Furthermore, AMD has transacted and conducted business in the State of Texas, including in this

District and elsewhere, and with Texas residents by making, using, selling, offering to sell, and/or importing (including importing products made by a patented process) products and instrumentalities that practice one or more claims of the Patents-in-Suit. Among other things, AMD, directly and/or through subsidiaries, affiliates, and/or intermediaries (including distributors, retailers, and others), uses, sells, ships, distributes, imports into, offers for sale, and/or advertises or otherwise promotes its products throughout the United States, including in the State of Texas. *See, e.g.*, www.amd.com. Moreover, AMD has purposefully and voluntarily placed its infringing products into the stream of commerce with the expectation that those products will be purchased and used by customers and/or consumers in the State of Texas, including in this District. At least for those reasons, AMD has the requisite minimum contacts within the forum such that the exercise of jurisdiction over AMD would not offend traditional notions of fair play and substantial justice.

8. Venue is proper in this District pursuant to 28 U.S.C. §§ 1391(b) and (c) and 1400(b). AMD has transacted and continues to transact business in this District. AMD also has committed and continues to commit acts of direct and/or indirect infringement in this District by, among other things, making, using, offering to sell, selling, and importing products that infringe the Asserted Patents. By way of further example, AMD develops certain infringing products within this District, such as, for example, the Ryzen and EPYC product families. As a further example, AMD has both the core's SRAM and data fabric teams, including teams that designed AMD's Infinity Fabric, that are based in this District. As a further example, AMD's mask design team, responsible, in part, for the planning and construction of the design of certain products that infringe at least a subset of the Patents-in-Suit, is based in this District. AMD has regular and established places of business in this District, including at least at 7171 Southwest Parkway, Austin, Texas 78735.

Our Locations



U.S.		
Austin, TX		
Advanced Micro Devices		
7171 Southwest Pkwy		
Tel: +1 512-602-1000		

(<https://www.amd.com/en/corporate/locations>)

Venue is further proper based on the facts alleged in the preceding paragraphs, which Monterey incorporates by reference as if fully set forth herein.

THE PATENTS-IN-SUIT

9. Monterey incorporates by reference the preceding paragraphs as if fully set forth herein.

A. U.S. Patent No. 6,979,640

10. The '640 patent, titled "Contact Structure and Method of Making the Same" was duly and properly issued by the USPTO on December 27, 2005. A true and correct copy of the '640 patent was attached to the August 8, 2021 original complaint as Exhibit A.

11. Monterey is the owner and assignee of the '640 patent; owns all right, title, and interest in the '640 patent; and holds the right to sue and recover damages for infringement thereof, including past infringement.

B. U.S. Patent No. 7,609,799

12. The '799 patent, titled "Circuit, System, and Method for Multiplexing Signals with Reduced Jitter," was duly and properly issued by the USPTO on October 27, 2009. A true and correct copy of the '799 patent was attached to the August 8, 2021 original complaint as Exhibit B.

13. Monterey is the owner and assignee of the '799 patent; owns all right, title, and interest in the '799 patent; and holds the right to sue and recover damages for infringement thereof, including past infringement.

C. U.S. Patent No. 7,899,145

14. The '145 patent, titled "Circuit, System, and Method for Multiplexing Signals with Reduced Jitter," was duly and properly issued by the USPTO on March 11, 2011. A true and correct copy of the '145 patent was attached to the August 8, 2021 original complaint as Exhibit C.

15. Monterey is the owner and assignee of the '145 patent; owns all right, title, and interest in the '145 patent; and holds the right to sue and recover damages for infringement thereof, including past infringement.

D. U.S. Patent No. 8,572,297

16. The '297 patent, titled "Programmable System-On-Chip Hub," was duly and properly issued by the USPTO on October 29, 2013. A true and correct copy of the '297 patent was attached to the August 8, 2021 original complaint as Exhibit D.

17. Monterey is the owner and assignee of the '297 patent; owns all right, title, and interest in the '297 patent; and holds the right to sue and recover damages for infringement thereof, including past infringement.

E. U.S. Patent No. 8,103,497

18. The '497 patent, titled "External Interface For Event Architecture," was duly and properly issued by the USPTO on January 24, 2012 . A true and correct copy of the '497 patent is attached as Exhibit G.

19. Monterey is the owner and assignee of the '497 patent; owns all right, title, and interest in the '497 patent; and holds the right to sue and recover damages for infringement thereof, including past infringement.

FACTUAL BACKGROUND

20. Monterey incorporates by reference the preceding paragraphs as if fully set forth herein.

21. The Patents-in-Suit stem from the research and design of innovative and proprietary technology developed by leading high-technology companies, including Cypress Semiconductor Corporation ("Cypress"). Cypress is an American multinational company and pioneer of cutting-edge semiconductor technology. Founded in 1982, Cypress has made substantial investments in researching, developing, and manufacturing high-quality semiconductor devices, integrated circuits, and products containing the same.

22. The Patents-in-Suit are directed to inventive technology relating to semiconductor devices, integrated circuits, and/or products containing the same.

23. Defendant AMD works closely with its customers, OEMs, foundry suppliers, distributors, and/or other third parties to make, use, sell, offer to sell, and/or import semiconductor devices, integrated circuits, and/or products containing the same. Among other things, AMD optimizes its manufacturing process for its customers and optimizes its products for integration into downstream products. AMD's affirmative acts in furtherance of the manufacture, use, sale, offer to sell, and importation of its products in and/or into the United States include, but are not limited to, any one or combination of: (i) designing specifications for manufacture of its products; (ii) collaborating on, encouraging, and/or funding the development of processes for the manufacture of its products; (iii) soliciting and/or sourcing the manufacture of its products; (iv) licensing, developing, and/or transferring technology and know-how to enable the manufacture of its products; (v) enabling

and encouraging the use, sale, or importation of its products in the United States; and (vi) advertising its products and/or downstream products incorporating them in the United States.

24. AMD also provides marketing and/or technical support services for its products from its facilities in the United States. For example, AMD maintains a website that advertises its products, including identifying the applications for which they can be used and providing specifications for its products. *See, e.g.*, www.amd.com/en. AMD makes available user manuals, product documentation, and other materials related to its products to residents of this District and to the United States as a whole. For example, AMD provides development content for specific chip products and applications; catalogs of hardware, software, and tools documentation; relevant support articles; various software code and tools; and case-specific technical assistance.

AMD’S PRE-SUIT KNOWLEDGE OF MONTEREY’S PATENTS AND CHARGE OF INFRINGEMENT

25. Before filing this action, Monterey, through its agent IPValue Management, Inc. (“IPValue”), notified AMD about the Patents-in-Suit and AMD’s infringement thereof. Among other things, Monterey identified the Patents-in-Suit to AMD; alleged that AMD infringed the Patents-in-Suit, including identifying exemplary infringing products; sought to engage AMD in discussions regarding AMD’s use of Monterey’s intellectual property (including the Patents-in-Suit); and offered to license the Patents-in-Suit to AMD. For example:

a. Monterey notified AMD that it infringes the ’640 patent on October 23, 2018.

b. On July 24, 2020, Monterey sent a letter to AMD, notifying AMD of its infringement of certain Monterey patents, including the ’640, ’799, ’145, and ’297 patents. Among other things, Monterey identified representative AMD products that utilize those patents, expressly charged that AMD and its customers infringed those patents, and explained that AMD required a

license from Monterey. Monterey requested a meeting with AMD.

c. AMD provided no non-infringement arguments nor invalidity arguments regarding the infringement described in the July 24, 2020 letter.

d. On June 4, 2021, Monterey sent another letter to AMD, referencing the July 24, 2020 letter.

e. AMD, however, did not respond to Monterey's June 4, 2021 letter.

f. On October 12, 2021, Monterey sent another letter to AMD, referencing its earlier correspondence and further notifying AMD of its infringement of the '497 patent.

g. Despite Monterey's repeated efforts, AMD still has not ceased its infringement of the Patents-in-Suit and has not taken a license to them. Instead, AMD continues to, directly and indirectly, knowingly, intentionally, and willfully infringe Monterey's patents.

COUNT ONE
INFRINGEMENT OF THE '640 PATENT

26. Monterey incorporates by reference the preceding paragraphs as if fully set forth herein.

27. Monterey is the assignee and lawful owner of all right, title, and interest in and to the '640 patent.

28. The '640 patent is valid and enforceable.

29. The '640 patent is directed to interconnection structures, including interlevel interconnection structures, devices containing these structures, and methods of making these structures and devices.

30. The '640 patent explains the disadvantages associated with prior art, which typically used fully enclosed contacts. Fully enclosed contacts suffered from disadvantages such as preventing the reduction of the size of semiconductor devices.

31. The '640 patent overcame that disadvantage by teaching, among other things, formation of a semiconductor, comprising forming a hole through a first dielectric layer; followed by extending the hole through an etch-stop layer, to expose a first conducting layer. The thickness of the etch-stop layer is at least one-half the smallest line width of the first conducting layer. The '640 patent teaches, among other things, that such an etch-stop layer on a lower conducting layer, where the thickness of the etch-stop layer is at least one half the smallest line width of the first conducting layer, prevents certain defects resulting from misalignment of the hole.

32. AMD has directly infringed, and continues to directly infringe, one or more claims of the '640 patent under 35 U.S.C. § 271, either literally and/or under the doctrine of equivalents, by, among other things, making, using, selling, offering to sell, and/or importing (including importing products made by a patented process) in or into the United States without authorization products covered by one or more claims of the '640 patent, including, by way of example and not limitation, products such as the Radeon RX 480 semiconductor device and other products in the Radeon 400, Radeon RX, Radeon 500, Radeon 600, Radeon Pro, Radeon Pro WX x100, Radeon Pro WX x200, Ryzen, Ryzen 3, Ryzen 5, Ryzen 7, Ryzen Threadripper, Ryzen 3 PRO, Ryzen 5 PRO, Ryzen 7 PRO, Athlon PRO, EPYC, EPYC Embedded, Athlon, AMD 3000 series, and AMD Instinct product families; products with the Polaris Architecture; other AMD 14 nm and smaller process node semiconductor devices, integrated circuits, and products; and all other semiconductor devices, integrated circuits, and products with similar infringing technology (collectively, "the Accused '640 Products").

33. As one non-limiting example, AMD infringes claim 1 of the '640 patent. For example, the process used to produce AMD's Radeon RX 480 semiconductor device performs the steps of:

- a. forming a hole through a first dielectric layer (e.g., silicon dioxide layer); followed by
- b. extending the hole through an etch-stop layer (e.g., nitride layer), to expose a first conducting layer (e.g., metal layer);
- c. wherein the thickness of the etch-stop layer (e.g., silicon carbon nitride layer) in the smallest dimension is at least one-half the smallest line width of the first conducting layer (e.g., metal layer).

34. AMD has known of the '640 patent and its infringement of that patent since at least as early as October 23, 2018. And Monterey continued to identify the '640 patent and AMD's infringement thereof through subsequent communications, including on July 24, 2020 and June 4, 2021; through the complaint filed on August 12, 2021; and yet again through this amended complaint.

35. AMD, knowing its products infringe the '640 patent and with the specific intent for others to infringe the '640 patent, has induced infringement of, and continues to induce infringement of, one or more claims of the '640 patent under 35 U.S.C. § 271, either literally and/or under the doctrine of equivalents, by, among other things, actively inducing others, including its customers, to make, use, sell, offer to sell, and/or import (including import products made by a patented process) in or into the United States without authorization the Accused '640 Products, as well as products containing the same. AMD knowingly and intentionally instructs its customers, OEMs, foundry suppliers, distributors, and/or other third parties to infringe at least through user manuals, product documentation, design specifications, layout files, formulas, and other materials, such as those located on AMD's website at <https://www.amd.com/en>. For example, AMD provides data sheets, development content, diagrams, white papers, and software instructing customers on uses of AMD's products that infringe the '640 patent. *See, e.g.,* <https://www.amd.com/en/products/graphics/radeon->

rx-480 and <https://www.amd.com/en/press-releases/amd-demonstrates-2016jan04>. Additional non-limiting examples include the materials found at <https://www.amd.com/en/products/specifications>.

36. AMD has contributed to the infringement of, and continues to contribute to the infringement of, one or more claims of the '640 patent under 35 U.S.C. § 271, either literally and/or under the doctrine of equivalents, by, among other things, selling, offering to sell, and/or importing in or into the United States the Accused '640 Products, which constitute a material part of the invention of the '640 patent, knowing the Accused '640 Products to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use. *See, e.g.,* <https://www.amd.com/en> and <https://www.amd.com/en/products/graphics/radeon-rx-480>.

37. Monterey has sustained and is entitled to recover damages as a result of AMD's past and continuing infringement.

38. AMD has committed—and continues to commit—acts of knowing, or at least willfully blind, infringing acts despite knowing that its actions constituted infringement of the valid and enforceable '640 patent, despite a risk of infringement that was known or so obvious that it should have been known to AMD even though AMD knew or should have known that its actions constituted and unjustifiably high risk of infringement of that valid and enforceable patent. AMD's conduct in light of these circumstances is egregious. AMD's knowing, deliberate, and willful infringement of the '640 patent entitles Monterey to increased damages under 35 U.S.C. § 284 and to attorney fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

COUNT TWO **INFRINGEMENT OF THE '799 PATENT**

39. Monterey incorporates by reference the preceding paragraphs as if fully set forth herein.

40. Monterey is the assignee and lawful owner of all right, title, and interest in and to the '799 patent.

41. The '799 patent is valid and enforceable.

42. The '799 patent is directed to electronic circuits, and more particularly to circuits for multiplexing signals from clock or data sources.

43. The '799 patent explains that many electronic systems included one or more synchronous components that relied on receiving related signals at substantially the same time to maintain proper operating characteristics of the electronic system. But variation in the arrival time of signals and other variations could cause a bit error when the data signal was incorrectly sampled by the clock signal.

44. The '799 patent explains the disadvantages with prior techniques that were developed to minimize the effects of timing delays, such as clock skew and jitter, which degraded the performance and reliability of synchronous systems. Some prior techniques involved including more than one phase lock loop (PLL) or delay lock loop (DLL) within a clock network for adjusting the timing of the clock path. A multiplexer circuit may have been included for selectively applying one of the PLL/DLL output signals to the clock path. However, prior multiplexer designs added crosstalk and power supply noise to the clock path when multiplexing signals (i.e., choosing between more than one signal) from the PLL/DLLs, which was undesirable in clock networks.

45. The '799 patent overcame that disadvantage by teaching, among other things, an improved multiplexer circuit with a first logic gate coupled for receiving a first signal, a second logic gate coupled for receiving a second signal, and a third logic gate coupled to outputs of the first and second logic gates for transmitting either the first signal or the second signal. A logic block may be configured for deactivating one of the first and second signals by supplying a static control signal to

the first and second logic gates, ensuring that only one active signal (e.g., either the first signal or the second signal) is supplied to the inputs of the first, second and third logic gates. The '799 further teaches that a user may arrange the logic gates within separate power domains to further isolate the logic gate inputs.

46. AMD has directly infringed, and continues to directly infringe, one or more claims of the '799 patent under 35 U.S.C. § 271, either literally and/or under the doctrine of equivalents, by, among other things, making, using, selling, offering to sell, and/or importing in or into the United States without authorization products covered by one or more claims of the '799 patent, including, by way of example and not limitation, products such as the Ryzen 3 1200 and other products in the Ryzen 3, Ryzen 3 Pro with Radeon Graphics, Ryzen 5, Ryzen 5 Pro with Radeon Graphics, Ryzen 7, Ryzen 7 Pro with Radeon Graphics, Ryzen Threadripper, Ryzen Threadripper Pro, Athlon Pro, Athlon with Radeon Graphics, and Epyc product families; other products with a Zen, Zen+, Zen 2, or Zen 3 architecture; and all other semiconductor devices, integrated circuits, and products with similar infringing technology (collectively, "the Accused '799 Products").

a. As one non-limiting example, AMD infringes claim 1 of the '799 patent.

For example, the Ryzen 3 1200 includes a circuit comprising:

b. a first logic gate arranged within a first power supply domain and coupled for receiving a first signal (e.g., a first logic gate within a first power supply domain of the Ryzen 3 1200);

c. a second logic gate arranged within a second power supply domain and coupled for receiving a second signal (e.g., a second logic gate within a second power supply domain of the Ryzen 3 1200);

d. a logic block arranged within a third power supply domain and coupled for

supplying a control signal to the first and second logic gates for deactivating one of the first and second signals (e.g., a system and power management unit within a third power supply domain of the Ryzen 3 1200); and

e. a third logic gate arranged within a fourth power supply domain and coupled to outputs of the first and second logic gates for transmitting either the first signal or the second signal, whichever has not been deactivated by the logic block (e.g., a third logic gate arranged within a fourth power supply domain of the Ryzen 3 1200).

47. AMD has known of the '799 patent and its infringement of that patent since at least as early as July 24, 2020. And Monterey continued to identify the '799 patent and AMD's infringement thereof through subsequent communications, including on June 4, 2021; through the complaint filed on August 12, 2021; and yet again through this amended complaint.

48. AMD, knowing its products infringe the '799 patent and with the specific intent for others to infringe the '799 patent, has induced infringement of, and continues to induce infringement of, one or more claims of the '799 patent under 35 U.S.C. § 271, either literally and/or under the doctrine of equivalents, by, among other things, actively inducing others, including its customers, to make, use, sell, offer to sell, and/or import in or into the United States without authorization the Accused '799 Products, as well as products containing the same. AMD knowingly and intentionally instructs its customers, OEMs, foundry suppliers, distributors, and/or other third parties to infringe at least through user manuals, product documentation, design specifications, layout files, formulas, and other materials, such as those located on AMD's website at <https://www.amd.com/en>. For example, AMD provides data sheets, development content, diagrams, white papers, and software instructing customers on uses of AMD's products that infringe the '799 patent. *See, e.g.*, <https://www.amd.com/en/processors/ryzen-with-graphics> and <https://www.amd.com/en/press->

releases/amd-exhibits-pc-2017may30. Additional non-limiting examples include the materials found at <https://www.amd.com/en/products/specifications>.

49. AMD has contributed to the infringement of, and continues to contribute to the infringement of, one or more claims of the '799 patent under 35 U.S.C. § 271, either literally and/or under the doctrine of equivalents, by, among other things, selling, offering to sell, and/or importing in or into the United States the Accused '799 Products, which constitute a material part of the invention of the '799 patent, knowing the Accused '799 Products to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use. *See, e.g.,* <https://www.amd.com/en> and <https://www.amd.com/en/processors/ryzen-with-graphics>.

50. Monterey has sustained and is entitled to recover damages as a result of AMD's past and continuing infringement.

51. AMD has committed—and continues to commit—acts of knowing, or at least willfully blind, infringing acts despite knowing that its actions constituted infringement of the valid and enforceable '799 patent, despite a risk of infringement that was known or so obvious that it should have been known to AMD even though AMD knew or should have known that its actions constituted and unjustifiably high risk of infringement of that valid and enforceable patent. AMD's conduct in light of these circumstances is egregious. AMD's knowing, deliberate, and willful infringement of the '799 patent entitles Monterey to increased damages under 35 U.S.C. § 284 and to attorney fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

COUNT THREE
INFRINGEMENT OF THE '145 PATENT

52. Monterey incorporates by reference the preceding paragraphs as if fully set forth herein.

53. Monterey is the assignee and lawful owner of all right, title, and interest in and to the '145 patent.

54. The '145 patent is valid and enforceable.

55. The '145 patent is directed to electronic circuits, and more particularly to circuits for multiplexing signals from clock or data sources.

56. The '145 patent explains that many electronic systems included one or more synchronous components that relied on receiving related signals at substantially the same time to maintain proper operating characteristics of the electronic system. But variation in the arrival time of signals and other variations could cause a bit error when the data signal was incorrectly sampled by the clock signal.

57. The '145 patent explains the disadvantages with prior techniques that were developed to minimize the effects of timing delays, such as clock skew and jitter, which degraded the performance and reliability of synchronous systems. Some prior techniques involved including more than one phase lock loop (PLL) or delay lock loop (DLL) within a clock network for adjusting the timing of the clock path. A multiplexer circuit may have been included for selectively applying one of the PLL/DLL output signals to the clock path. However, prior multiplexer designs added crosstalk and power supply noise to the clock path when multiplexing signals (i.e., choosing between more than one signal) from the PLL/DLLs, which was undesirable in clock networks.

58. The '145 patent overcame that disadvantage by teaching, among other things, an improved multiplexer circuit with a first logic gate coupled for receiving a first signal, a second logic gate coupled for receiving a second signal, and a third logic gate coupled to outputs of the first and second logic gates for transmitting either the first signal or the second signal. A logic block may be configured for deactivating one of the first and second signals by supplying a static control signal to

the first and second logic gates, ensuring that only one active signal (e.g., either the first signal or the second signal) is supplied to the inputs of the first, second and third logic gates. This eliminates crosstalk and power supply noise injection at the inputs of the logic gates. The '145 further teaches that a user may arrange the logic gates within separate power domains to further isolate the logic gate inputs.

59. AMD has directly infringed, and continues to directly infringe, one or more claims of the '145 patent under 35 U.S.C. § 271, either literally and/or under the doctrine of equivalents, by, among other things, making, using, selling, offering to sell, and/or importing in or into the United States without authorization products covered by one or more claims of the '145 patent, including, by way of example and not limitation, products such as the Ryzen 3 1200 and other products in the Ryzen 3, Ryzen 3 Pro with Radeon Graphics, Ryzen 5, Ryzen 5 Pro with Radeon Graphics, Ryzen 7, Ryzen 7 Pro with Radeon Graphics, Ryzen Threadripper, Ryzen Threadripper Pro, Athlon Pro, Athlon with Radeon Graphics, and Epyc product families; other products with a Zen, Zen+, Zen 2, or Zen 3 architecture; and all other AMD semiconductor devices, integrated circuits, and products with similar infringing technology (collectively, “the Accused '145 Products”).

60. As one non-limiting example, AMD infringes claim 1 of the '145 patent. For example, the Ryzen 3 1200 includes an apparatus comprising:

- a. a plurality of power supply domains (e.g., the plurality of power supply domains in the Ryzen 3 1200); and
- b. a plurality of logic components, each of the plurality of logic components within a different one of the plurality of power supply domains (e.g., the Zen cores, L3 cache, and system and power management unit are within separate power supply domains), wherein each of the plurality of logic components is configured to operate with a corresponding clock signal within

a respective one of the plurality of power supply domains (e.g., the Zen cores, L3 cache, and system and power management unit are configured to operate with a corresponding clock signal in their respective power supply domains), wherein the plurality of power supply domains comprises first, second, third and fourth power supply domains (e.g., the plurality of power supply domains on the Ryzen 3 1200 comprises first, second, third, and fourth power supply domains), wherein a plurality of logic components comprises:

c. a first logic gate arranged within the first power supply domain and configured to operate with a first clock signal (e.g., a first logic gate within a first power supply domain of the Ryzen 3 1200 configured to operate with a first clock signal);

d. a second logic gate arranged within the second power supply domain and configured to operate with a second clock signal (e.g., a second logic gate within a second power supply domain of the Ryzen 3 1200 configured to operate with a second clock signal);

e. a first logic block arranged within the third power supply domain and coupled to the first and second logic gates (e.g., a system and power management unit within the third power supply domain coupled to the first and second logic gates); and

f. a second logic block arranged within the fourth power supply domain and coupled to the first and second logic gates (e.g., an L3 cache within a fourth power supply domain coupled to the first and second logic gates).

61. AMD has known of the '145 patent and its infringement of that patent since at least as early as July 24, 2020. And Monterey continued to identify the '145 patent and AMD's infringement thereof through subsequent communications, including on June 4, 2021; through the complaint filed on August 12, 2021; and yet again through this amended complaint.

62. AMD, knowing its products infringe the '145 patent and with the specific intent for

others to infringe the '145 patent, has induced infringement of, and continues to induce infringement of, one or more claims of the '145 patent under 35 U.S.C. § 271, either literally and/or under the doctrine of equivalents, by, among other things, actively inducing others, including its customers, to make, use, sell, offer to sell, and/or import in or into the United States without authorization the Accused '145 Products, as well as products containing the same. AMD knowingly and intentionally instructs its customers, OEMs, foundry suppliers, distributors, and/or third parties to infringe at least through user manuals, product documentation, design specifications, layout files, formulas, and other materials, such as those located on AMD's website at <https://www.amd.com/en>. For example, AMD provides data sheets, development content, diagrams, white papers, and software instructing customers on uses of AMD's products that infringe the '145 patent. *See, e.g.*, <https://www.amd.com/en/processors/ryzen-with-graphics> and <https://www.amd.com/en/press-releases/amd-exhibits-pc-2017may30>. Additional non-limiting examples include the materials found at <https://www.amd.com/en/products/specifications>.

63. AMD has contributed to the infringement of, and continues to contribute to the infringement of, one or more claims of the '145 patent under 35 U.S.C. § 271, either literally and/or under the doctrine of equivalents, by, among other things, selling, offering to sell, and/or importing in or into the United States the Accused '145 Products, which constitute a material part of the invention of the '145 patent, knowing the Accused '145 Products to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use. *See, e.g.*, <https://www.amd.com/en> and <https://www.amd.com/en/processors/ryzen-with-graphics>.

64. Monterey has sustained and is entitled to recover damages as a result of AMD's past and continuing infringement

65. AMD has committed—and continues to commit—acts of knowing, or at least willfully blind, infringing acts despite knowing that its actions constituted infringement of the valid and enforceable '145 patent, despite a risk of infringement that was known or so obvious that it should have been known to AMD even though AMD knew or should have known that its actions constituted and unjustifiably high risk of infringement of that valid and enforceable patent. AMD's conduct in light of these circumstances is egregious. AMD's knowing, deliberate, and willful infringement of the '145 patent entitles Monterey to increased damages under 35 U.S.C. § 284 and to attorney fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

COUNT FOUR
INFRINGEMENT OF THE '297 PATENT

66. Monterey incorporates by reference the preceding paragraphs as if fully set forth herein.

67. Monterey is the assignee and lawful owner of all right, title, and interest in and to the '297 patent.

68. The '297 patent is valid and enforceable.

69. The '297 patent is generally directed to a programmable devices, and more particularly to a programmable hub.

70. Complex electronic systems often required the addition of peripheral units such as operational and instrument amplifiers, filters, timers, digital logic circuits, analog to digital and digital to analog converters. Implementation of these extra peripherals created additional difficulties such as the need for extra space for new components, additional attention during production of a printed circuit board, and increased power consumption. All of these factors can significantly affect the price and development cycle of the project.

71. The '297 patent teaches that prior architectures provided only coarse-grained digital

programmability in which only a few fixed functions with a small number of options were available.

72. To improve upon the prior art, the '297 patent discloses, among other things, a Programmable System-on-a-Chip Hub which is configured to enable master processing elements inside and outside the PHUB to simultaneously access peripherals on different busses. The PHUB is programmable to connect to a configurable number of busses, to connect a configurable number of peripherals to the busses, and to configure different address and data word lengths for using over the busses.

73. AMD has directly infringed, and continues to directly infringe, one or more claims of the '297 patent under 35 U.S.C. § 271, either literally and/or under the doctrine of equivalents, by, among other things, making, using, selling, offering to sell, and/or importing in or into the United States without authorization products covered by one or more claims of the '297 patent, including, by way of example and not limitation, all AMD devices incorporating AMD's Infinity Fabric and Infinity Architecture such as the AMD Ryzen Threadripper, and other products in the EPYC and Ryzen Threadripper, Instinct, and Ryzen Threadripper PRO product families; and all other semiconductor devices, integrated circuits, and products with similar infringing technology (collectively, "the Accused '297 Products").

74. As one non-limiting example, AMD infringes claim 1 of the '297 patent. For example, the AMD Ryzen Threadripper Processors, such as the AMD Ryzen Threadripper 1950x, contain a connection hub, comprising:

- a. one or more master processing elements (e.g., CPU cores);
- b. multiple different separately accessible busses (e.g, busses between the cores and peripherals);
- c. a bus connection circuit configured to enable the master processing

elements to access any of the different busses simultaneously (e.g., AMD's Infinity Fabric Scalable Data Fabric);

d. multiple independently operating bus interface circuits each associated with a different one of the multiple busses (e.g., Coherent AMD SocKet Extender "CAKE"), wherein the bus interface circuits are configured to reduce power consumption by the busses that are not being accessed by one of the master processing elements by powering down the busses that are not being accessed based on a first signal (e.g., bus identification signal) identifying the at least one of the busses and a second signal (e.g., a clock signal) indicating whether the at least one of the busses is active, wherein the first signal and the second signal are generated by one of the master processing elements, and wherein the bus interface circuits are further configured to power up the at least one of the busses in response to determining that the at least one of the busses is being accessed by one of the master processing elements; and

e. a configuration memory configured to store configuration values for the bus connection circuit and the multiple independently operating bus interface circuits (e.g., the Infinity Fabric Configuration Settings).

75. AMD has known of the '297 patent and its infringement of that patent since at least as early as July 24, 2020. And Monterey continued to identify the '297 patent and AMD's infringement thereof through subsequent communications, including on June 4, 2021; through the complaint filed on August 12, 2021; and yet again through this amended complaint.

76. AMD, knowing its products infringe the '297 patent and with the specific intent for others to infringe the '297 patent, has induced infringement of, and continues to induce infringement of, one or more claims of the '297 patent under 35 U.S.C. § 271, either literally and/or under the doctrine of equivalents, by, among other things, actively inducing others, including its customers, to

make, use, sell, offer to sell, and/or import in or into the United States without authorization the Accused '297 Products, as well as products containing the same. AMD knowingly and intentionally instructs its customers, OEMs, foundry suppliers, distributors, and/or other third parties to infringe at least through user manuals, product documentation, design specifications, layout files, formulas, and other materials, such as those located on AMD's website at <https://www.amd.com/en>. For example, AMD provides data sheets, development content, diagrams, white papers, and software instructing customers on uses of AMD's products that infringe the '297 patent. *See, e.g.*, <https://www.amd.com/en> and <https://www.amd.com/en/support>. Additional, non-limiting examples include the materials found on AMD's websites at <https://www.amd.com/en/products/ryzen-threadripper>.

77. AMD has contributed to the infringement of, and continues to contribute to the infringement of, one or more claims of the '297 patent under 35 U.S.C. § 271, either literally and/or under the doctrine of equivalents, by, among other things, selling, offering to sell, and/or importing in or into the United States the Accused '297 Products, which constitute a material part of the invention of the '297 patent, knowing the Accused '297 Products to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use. *See, e.g.*, <https://www.amd.com/en/support> and <https://www.amd.com/en/products/ryzen-threadripper>.

78. Monterey has sustained and is entitled to recover damages as a result of AMD's infringement of the '297 patent.

79. AMD has committed—and continues to commit—acts of knowing, or at least willfully blind, infringing acts despite knowing that its actions constituted infringement of the valid and enforceable '297 patent, despite a risk of infringement that was known or so obvious that it should

have been known to AMD even though AMD knew or should have known that its actions constituted and unjustifiably high risk of infringement of that valid and enforceable patent. AMD's conduct in light of these circumstances is egregious. AMD's knowing, deliberate, and willful infringement of the '297 patent entitles Monterey to increased damages under 35 U.S.C. § 284 and to attorney fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

COUNT FIVE
INFRINGEMENT OF THE '497 PATENT

80. Monterey incorporates by reference the preceding paragraphs as if fully set forth herein.

81. Monterey is the assignee and lawful owner of all right, title, and interest in and to the '497 patent.

82. The '497 patent is valid and enforceable.

83. The '497 patent is generally directed to event detection and monitoring.

84. The '497 patent explains the disadvantages associated with prior attempts to detect and monitor electronic devices. Conventional devices were expensive, offered poor performance, and were generally inefficient.

85. The '497 patent overcame the disadvantages of conventional devices by teaching, among other things, efficient devices to monitor and analyze electronic devices.

86. AMD has directly infringed, and continues to directly infringe, one or more claims of the '497 patent under 35 U.S.C. § 271, either literally and/or under the doctrine of equivalents, by, among other things, making, using, selling, offering to sell, and/or importing in or into the United States without authorization products covered by one or more claims of the '497 patent, including, by way of example and not limitation, products in the Ryzen, Ryzen Pro, and Ryzen Threadripper Pro families; AMD products using AMD's Precision Boost feature; and all other AMD

semiconductor devices, systems, integrated circuits, and products with similar infringing technology (collectively, “the Accused ’497 Products”).

87. As one non-limiting example, AMD infringes claim 13 of the ’497 patent. For example, the AMD Ryzen Processor includes a system comprising:

- a. a programmable event engine for detecting events based upon an execution of an event thread (e.g., the system management unit (“SMU”) of the Ryzen Processor)
- b. a memory coupled to said event engine (e.g., the memory coupled to the SMU) that stores data for programming said event engine to detect said events, wherein said data comprises a plurality of programmable states of said event thread, and wherein said plurality of programmable states are for re-configuring said programmable event engine in response to detecting one of said events during execution of said event thread, and wherein said reconfiguring said programmable event engine comprises changing at least one condition used by said programmable event engine to detect said events; and
- c. an external pin coupled to said event engine (e.g. the external pins connected to the SMU);
- d. and wherein said event engine is further for outputting a signal on said external pin in response to detecting a first event of said events, and wherein said event engine is configured to change from operation in accordance with a first programmable state to operation in accordance with a second programmable state by loading data from the memory.

88. AMD has known of the ’497 patent and its infringement of that patent since at least as early as October 12, 2021 and through this amended complaint.

89. AMD, knowing its products infringe the ’497 patent and with the specific intent for others to infringe the ’497 patent, has induced infringement of, and continues to induce infringement

of, one or more claims of the '497 patent under 35 U.S.C. § 271, either literally and/or under the doctrine of equivalents, by, among other things, actively inducing others, including its customers, to make, use, sell, offer to sell, and/or import in or into the United States without authorization the Accused '497 Products, as well as products containing the same. AMD knowingly and intentionally instructs its customers, OEMs, foundry suppliers, distributors, and/or third parties to infringe at least through user manuals, product documentation, design specifications, layout files, formulas, and other materials, such as those located on AMD's website at www.amd.com. For example, AMD provides data sheets, development content, diagrams, white papers, and software instructing customers on uses of AMD's products that infringe the '497 patent. *See, e.g.,* <https://www.amd.com/en/support/kb/faq/cpu-pb2>. Additional non-limiting examples include the materials found at <https://www.amd.com/en/products/specifications>.

90. AMD has contributed to the infringement of, and continues to contribute to the infringement of, one or more claims of the '497 patent under 35 U.S.C. § 271, either literally and/or under the doctrine of equivalents, by, among other things, selling, offering to sell, and/or importing in or into the United States the Accused '497 Products, which constitute a material part of the invention of the '497 patent, knowing the Accused '497 Products to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use.

91. Monterey has sustained and is entitled to recover damages as a result of AMD's past and continuing infringement.

92. AMD has committed—and continues to commit—acts of knowing, or at least willfully blind, infringing acts despite knowing that its actions constituted infringement of the valid and enforceable '497 patent, despite a risk of infringement that was known or so obvious that it should

have been known to AMD even though AMD knew or should have known that its actions constituted and unjustifiably high risk of infringement of that valid and enforceable patent. AMD's conduct in light of these circumstances is egregious. AMD's knowing, deliberate, and willful infringement of the '497 patent entitles Monterey to increased damages under 35 U.S.C. § 284 and to attorney fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

RELIEF REQUESTED

Wherefore, Monterey respectfully requests that this Court enter judgment against AMD as follows:

- A. that AMD has infringed each of the Patents-in-Suit;
- B. that AMD's infringement of each Patents-in-Suit is and has been willful;
- C. that Monterey be awarded damages adequate to compensate it for the patent infringement that has occurred, together with pre-judgment interest, post-judgment interest, and costs;
- D. that Monterey be awarded an accounting and additional damages for any infringing sales not presented at trial;
- E. that Monterey be awarded all other damages permitted by 35 U.S.C. § 284, including without limitation increased damages up to three times the amount of compensatory damages found;
- F. that this is an exceptional case and that Monterey be awarded its costs and reasonable attorneys' fees incurred in this action as provided by 35 U.S.C. § 285;
- G. that AMD as well as its officers, directors, agents, employees, representatives, attorneys, and all others acting in privity or in concert with it, its subsidiaries, divisions, successors and assigns be permanently enjoined from further infringement of each of the Patents-in-Suit;

- H. that, in the event a permanent injunction preventing further infringement of each of the Patents-in-Suit is not granted, Monterey be awarded a compulsory ongoing licensing fee for any such further infringement; and
- I. such other relief as this Court deems just and proper.

DEMAND FOR JURY TRIAL

Monterey hereby demands trial by jury on all claims and issues so triable.

Dated: October 21, 2021

By: /s/ Jonas McDavit w/permission Charles
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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing document was filed electronically in compliance with Local Rule CV-5(a). Therefore, this document was served on all counsel who are deemed to have consented to electronic service on this the 21st day of October, 2021.

/s/ Charles Everingham IV
Charles Everingham IV